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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/922,092	08/03/2001	Chi-Che Tsai	JCLA6561	8710
23900	7590	11/15/2006	EXAMINER	
J C PATENTS, INC. 4 VENTURE, SUITE 250 IRVINE, CA 92618			SORRELL, ERON J	
			ART UNIT	PAPER NUMBER
			2182	

DATE MAILED: 11/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/922,092

Applicant(s)

TSAI, CHI-CHE

Examiner

Eron J. Sorrell

Art Unit

2182

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 August 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Christiansen et al. (U.S. Patent No. 5,983,302 hereinafter "Christiansen") in view of Arramreddy et al. (U.S. Patent No. 6,826,644 hereinafter "Arramreddy").

3. Referring to claim 1, Christiansen teaches a method of bus priority arbitration (see figure 5) used in a bus system that comprises a bus and a plurality of masters connected to the bus (see figure 2), wherein each master can output a request for a grant to use the bus, the method comprising:

sequentially responding to the request of each master according to a predefined orderly rotation (see lines 34-56 of column 5);

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stopping a response to the requests of the masters according to the predefined orderly rotation when data for one of the masters is ready (see lines 27-37 of column 6);

performing the higher priority data transfer using the bus (see lines 27-37 of column 6); and

resuming a response to the requests of the masters according to the predefined orderly rotation (see lines 38-49 of column 6).

Christiansen fails to teach that the masters are considered as a group, and attributing highest priority to *any* master, which the data is ready for the grant to use the bus.

Arramreddy teaches, in an data driven arbitration system, the above limitations (see lines 4-19 of lines 4).

It would have been obvious to one of skill in the art at the time of the applicant's invention to modify the method of Christiansen with the above teachings of Arramreddy. One of ordinary skill in the art would have been motivated to make such modification in order to maximize the utilization of the PCI bandwidth and throughput as suggested by Arramreddy (see lines 47-53 of column 6).

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4. Referring to claim 2, Christiansen teaches the bus is a peripheral component interconnect (PCI) bus (see item labeled 12 in figure 1).

5. Referring to claim 3, Christiansen fails to teach the steps of responding to the requests of the masters and attributing the highest priority to the master are performed by a host bridge.

Christiansen, however does teach a host bridge (see item 16 in figure 1) and further teaches the arbitration logic can be included within any module in the system (see lines 17-33 of column 5).

Arramreddy teaches in an analogous system, the arbitration logic, located within the host bridge (see lines 37-46 of column 3).

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the method of Christiansen with the above teachings of Arramreddy. One of ordinary skill in the art at the time of the applicant's invention would have been motivated to make such modification because Christiansen teaches the arbitration logic can be within any module in the system and Arramreddy teaches that arbitration logic is conventionally located within a host bridge (see lines 37-46 of column 6).

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6. Referring to claim 4, Christiansen teaches stopping the response to the requests of the masters is carried out by outputting a stop signal (see lines 27-37 of column 67 note the "ARBcrit" signal is a stop signal).

7. Referring to claim 5, Christiansen teaches the step of resuming the response to the requests of the masters according to the predefined orderly rotation is performed from the master which request evaluation has been stopped (see lines 46-59 of column 7).

8. Referring to claim 6, Christiansen teaches the steps of resuming the response to the requests of the masters according to the predefined orderly rotation is performed from the master which data transfer has been performed (see lines 46-59 of column 7).

9. Referring to claim 7, Christiansen teaches a peripheral device interconnect structure comprising:

- a bus (see item 12 in figure 1);

- a plurality of peripheral devices connected to the bus, the peripheral devices are considered as a group, each of the

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peripheral devices embedding a master (see items 24 and 26 in figure 1 and lines 34-45 of column 4);

a host bridge connected to the bus (see item 16 in figure 1); and

arbitration logic operable to:

respond to a plurality of requests from each of the masters according to a predefined orderly rotation (see lines 34-56 of column 5);

stop responding to the requests from each of the masters according to the predefined orderly rotation when a higher priority transfer is ready (see lines 27-37 of column 6).

Christiansen fails to teach receiving information indicating that a data transfer for *any one* of the masters is ready; attributing highest priority to *any* master, which the data is ready for the grant to use the bus and that the arbitration logic is within the host bridge connected to the bus, however Christiansen does teach the arbitration logic can be included within any module in the system (see lines 17-33 of column 5).

Arramreddy teaches in an analogous system, receiving information indicating that a data transfer for any one of the master is ready and attributing highest priority to the master, which the data is ready for the grant to use (see lines 4-19 of

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lines 4) and that the bus the arbitration logic, located within the host bridge (see lines 37-46 of column 3).

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the method of Christiansen with the above teachings of Arramreddy. One of ordinary skill in the art at the time of the applicant's invention would have been motivated to make such modification because Christiansen teaches the arbitration logic can be within any module in the system and Arramreddy teaches that arbitration logic is conventionally located within a host bridge (see lines 37-46 of column 3).

10. Referring to claim 8, Arramreddy teaches the host bridge is connected to a data storage device from which the host bridge receives information indicating that a data transfer is ready (see paragraph bridging columns 2 and 3).

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the system of Christiansen with the above teachings Arramreddy for the same reasons as mentioned above.

Response to Arguments

11. Applicant's arguments filed 8/22/06 have been fully considered but they are not persuasive. The applicant argues:

1) the applicant's invention does not treat the masters by equal priority, based on a round robin arbitration scheme, as described by Christiansen, thus Christiansen fails to disclose the features of the present invention (see paragraph bridging pages 2 and 3 of applicant's remarks);

2) the invention of Christiansen would be destroyed by combining the features of Arramreddy as set forth by the Examiner because each of the masters of a first priority are separately assigned a priority level (see last paragraph of page 3 of applicant's remarks).

12. As per argument 1, the Examiner disagrees. Christiansen does teach responding to requests from the bus masters based on a round robin arbitration scheme, however this corresponds to applicant's claim limitation of "sequentially responding to the request of masters according to a predefined orderly rotation (see independent claims 1 and 7)." *Christiansen further teaches that at least one of the bus masters has a higher priority than the remaining bus masters* (emphasis added) (see lines 55-67 of

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column 4) and can gain access to the bus, interrupting the predefined orderly rotation, when data is ready for that master is ready (see lines 27-37 of column 6).

13. As per argument 2, the Examiner disagrees.

Per MPEP 2145,

"The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference... Rather, the test is what the combined teachings of those references would have suggested to those of ordinary skill in the art." In re Keller, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981). See also In re Sneed, 710 F.2d 1544, 1550, 218 USPQ 385, 389 (Fed. Cir. 1983) ("[I]t is not necessary that the inventions of the references be physically combinable to render obvious the invention under review."); and In re Nievelt, 482 F.2d 965, 179 USPQ 224, 226 (CCPA 1973) ("Combining the teachings of references does not involve an ability to combine their specific structures."). However, the claimed combination cannot change the principle of operation of the primary reference or render the reference inoperable for its intended purpose.

14. Combining the teachings of Arramreddy with the teachings of Christiansen to arrive at the applicant's claimed invention, neither changes the principle operation of Christiansen (i.e. arbitrating access to a bus), nor renders Christiansen inoperable for arbitrating access to a bus. Rather combining the teachings of Arramreddy with Christiansen, results in an improvement in efficiency, because the system will not have to consider requests from masters for which there is no data ready.

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The rotating sequence of Christiansen can still be used, but only considering those masters that have data ready.

Conclusion

15. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eron J. Sorrell whose telephone number is 571 272-4160. The examiner can normally be reached on Monday-Friday 8:00AM - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kim Huynh can be reached on 571-272-4147. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

EJS
11/8/2006



KIM HUYNH
SUPERVISORY PATENT EXAMINER

11/8/06